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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/821,303	04/09/2004	Vishal Vikram Ghotge	13768.783.128	1117
47973	7590	05/02/2007	EXAMINER	
WORKMAN NYDEGGER/MICROSOFT 1000 EAGLE GATE TOWER 60 EAST SOUTH TEMPLE SALT LAKE CITY, UT 84111			BIBBEE, JARED M	
ART UNIT		PAPER NUMBER		
2161				
MAIL DATE		DELIVERY MODE		
05/02/2007		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>
	10/821,303	GHTGE ET AL.
	<b>Examiner</b>	<b>Art Unit</b>
	Jared M. Bibbee	2161

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 16 February 2007.  
 2a) This action is **FINAL**.                  2b) This action is non-final.  
 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1,3-19,21-29 and 31 is/are pending in the application.  
 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
 5) Claim(s) \_\_\_\_\_ is/are allowed.  
 6) Claim(s) 1,3-19,21-29, and 31 is/are rejected.  
 7) Claim(s) \_\_\_\_\_ is/are objected to.  
 8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.  
 10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.  
     Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
     Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
 a) All    b) Some \* c) None of:  
 1. Certified copies of the priority documents have been received.  
 2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

  
 SAM RIMELL  
 PRIMARY EXAMINER

#### Attachment(s)

1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	5) <input type="checkbox"/> Notice of Informal Patent Application
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____	6) <input type="checkbox"/> Other: _____

## **DETAILED ACTION**

### *Response to Amendment*

1. This Office Action has been issued in response to amendment filed on 16 February 2007. Claims 2, 20, 30, and 32 are cancelled. Claims 1, 3-19, 21-29, and 31 are pending. Applicants' arguments have been carefully and respectfully considered in light of the instant amendment and are moot, as they relate to the claim rejections under 35 U.S.C. 103 as will be discussed below. Accordingly, this action has been made FINAL.

### *Claim Objections*

2. Claim 1 is objected to because of the following informalities: Claim 1 recites a computer program product residing on a physical storage medium. Examiner respectfully requests the Applicant add the term "computer" to the physical storage medium, so that the claim would recite "physical computer storage medium". The basis for this objection is that as is the claim lends itself to the computer program product (i.e. code) being stored on a sheet of paper (i.e. physical storage medium).

Claim 2 references the computer program product of claim 2, but claim 2 has been cancelled. Examiner suggests changing the claim to depend from claim 1.

Appropriate correction is required.

### *Claim Rejections - 35 USC § 103*

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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4. Claims 1, 3, 23, and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linde (US 6,799,258 B1) in view of Talagala et al (US 2003/0167439 A1).

With respect to independent claim 1, Linde teaches a computing system that runs a diagnostic program for determining errors on a live volume, a computer program product residing on a physical storage medium for implementing a method of ensuring against false error reporting during an online verification process by finding errors in a shadow copy of the live volume, the computer program product comprising, one or more computer readable storage media having stored thereon computer executable instructions that, when executed by a processor, can cause the distributed computing system to perform the following:

- create a shadow copy of the live volume, which provides a logical duplicate of the live volume at a point in time (*see column 2, lines 30-40*);
- users still have access to the live volume during the integrity verification (*see column 2, lines 30-40*); and

Linde does not appear to explicitly disclose:

- receive a request to run a verification tool on a live volume in order to determine if errors exist thereon;
- examine the shadow copy to verify an integrity of the live volume, wherein the shadow copy does not change during examination,
- based on the examination of the shadow copy, generate a report on the integrity of the live volume, which indicates to a user that one or more errors were found and that the live volume should be take off-line in order to fix the one or more error.

However, Talagala discloses:

- receive a request to run a verification tool on a live volume in order to determine if errors exist thereon (*see [0035]*);
- examine the shadow copy to verify an integrity of the live volume, wherein the shadow copy does not change during examination (*see [0035]-[0039]*),
- based on the examination of the shadow copy, generate a report on the integrity of the live volume, which indicates to a user that one or more errors were found and that the live volume should be take off-line in order to fix the one or more error (*see [0039]*).

It would have been obvious at the time of the inventions to modify the point in time volume as taught by Linde to incorporate the checksum calculation as taught by Talagala. The skilled artisan would have been motivated to modify the point in time volume as taught by Linde to incorporate the checksum calculation as taught by Talagala for the purpose of preventing performance degradation and data corruption (*see [0002] and [0003]*).

With respect to dependent claim 3, Linde and Talagala disclose all of the elements of claim 1 and Linde further teaches the volume is changed while examining the shadow copy to verify an integrity of the volume and wherein verifying the integrity is unaffected by any changes to the volume (*see column 2, lines 30-40*).

With respect to independent claim 23, claim 23 is a method claim corresponding to the computer-readable medium claim 1 and is rejected for the same reasons set forth in the rejection of claim 1 above.

With respect to independent claim 29, claim 29 is a system claim corresponding to the computer-readable medium claim 1 and is rejected for the same reasons set forth in the rejection of claim 1 above.

5. Claims 4-10, 15, 16, 18, 19, 21, and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linde in view of Talagala as applied to claims 1, 3, and 23 above, and further in view of Slaughter et al (U.S. 6,014,669).

With respect to dependent claim 4, Linde and Talagala disclose all of the elements of claim 1, but fails to explicitly recite the volume includes meta-data that comprises entries, wherein at least some of the entries comprise file and directory entries.

However, Slaughter clearly teaches the limitation where the volume includes meta-data that comprises entries, wherein at least some of the entries comprise file and directory entries (*see column 10, lines 44-60*).

It would have been obvious at the time of the inventions to modify the teachings of Linde and Talagala to incorporate the meta-data comprising file and directory entries as taught by Slaughter. The skilled artisan would have been motivated to modify the teachings of Linde and Talagala to incorporate the meta-data comprising file and directory entries as taught by Slaughter for the purpose of increasing availability, reducing interruption, and increasing consistency in data (*see column 2, lines 16-25*).

With respect to dependent claim 5, Slaughter further teaches the limitation where examining the shadow copy to verify an integrity of the volume comprises searching the meta-data for file entries which no directory entry indexes (*see column 10, lines 44-60; Note specifically lines 52-56 define the columns within a file and directory entry. Then in lines 58-59, Slaughter discloses that a blank is used to represent 'No Value'. These 'No Value' entries can be searched using a query such as the one being discussed in column 11, lines 57-65*).

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With respect to dependent claim 6, Slaughter further teaches the limitation where examining the shadow copy to verify an integrity of the volume comprises searching the meta-data for directory entries which index a file entry wherein the file entry does not index the directory entry (*see column 10, lines 44-60; Note specifically lines 52-56 define the columns within a file and directory entry. Then in lines 58-59, Slaughter discloses that a blank is used to represent 'No Value'. According to the example in lines 59-60, a 'No Value' in a file column would cause a corruption in the data because the directory would be pointing to a non-accessible file.*).

With respect to dependent claim 7, Slaughter further teaches the limitation where examining the shadow copy to verify an integrity of the volume comprises searching the meta-data for a directory entry which is indexed by a file entry, wherein the directory entry does not index the file entry (*see column 10, lines 44-60; Note specifically lines 52-56 define the columns within a file and directory entry. Then in lines 58-59, Slaughter discloses that a blank is used to represent 'No Value'. According to the example in lines 59-60, a 'No Value' in a directory column would cause a corruption in the data because the file would be pointing to a non-accessible directory.*).

With respect to dependent claim 8, Slaughter further teaches the limitation where at least some of the entries comprise attributes of an object associated with the entry, wherein examining the shadow copy to verify an integrity of the volume comprises examining the at least some of the entries to verify that attributes included in each entry are correct (*see column 10, lines 64-67 through column 11, lines 1-12; Note that within the consistency record there exists attribute columns such as, date (first column), length (third column), and conditions (fourth column), etc.*).

With respect to dependent claim 9, Slaughter further teaches the limitation where one of the attributes comprises a length of a name of an object associated with the entry including the attribute (*see column 11, lines 5-7*).

With respect to dependent claim 10, Slaughter further teaches the limitation where examining the shadow copy to verify an integrity of the volume comprises searching for unreadable entries in the meta-data (*see column 10, lines 44-60; Note specifically lines 52-56 define the columns within a file and directory entry. Then in lines 58-59, Slaughter discloses that a blank is used to represent 'No Value'. A 'No Value' cannot be read because there is nothing to be read. These 'No Value' entries can be searched using a query such as the one being discussed in column 11, lines 57-65*).

With respect to dependent claim 15, Slaughter clearly teaches the limitation where the volume comprises a raw volume (*see column 6, lines 40-44; Note that Applicant points out that a database has a raw volume associated with its own data verification tool. Slaughter creates a shadow copy of the configuration database, which would be a copy of the raw volume of data. Also see column 3, lines 63-67 through column 4, lines 1-2, where Slaughter distinguishes between a raw volume (configuration database 110) and a volume (Dynamic database 114)*).).

With respect to dependent claim 16, Slaughter further teaches the limitation where the raw volume lacks a table that identifies objects contained on the volume (*see Fig. 6 and column 10, lines 44-60; Note that Slaughter does teach a table like structure ("rows and columns", see lines 44-49), but fails to identify any objects that might be stored within the volume. The table like structure only provides file/directory information.*).

With respect to dependent claim 18, Slaughter further teaches the limitation where the volume is accessed by a database engine (*see column 4, lines 9-10; Note that the cluster server serves as the database engine which accesses the local cluster configuration database.*).

With respect to dependent claim 19, Slaughter further teaches the limitation where examining the shadow copy to verify an integrity of the volume comprises the database engine examining the shadow copy (*see column 4, lines 14-35; Note the cluster membership monitor upholds consistency between the shadow copies located at each node.*).

With respect to dependent claim 21, Slaughter further teaches the limitation where the shadow copy comprises a logical duplicate of the volume at a selected point in time, wherein the shadow copy maintains data found on the volume at the selected point in time as the volume changes (*see column 6, lines 40-44 and column 5, lines 24-34 and column 11, lines 2-4 and lines 13-16; Note that the consistency record within each shadow copy is used to ensure that the cluster has the most up to date copy of the changes made to the master database.*).

With respect to dependent claim 24, Linde and Talagala disclose all of the elements of claim 23, but fails to explicitly recite the shadow copy is created by one of a plurality of shadow copy providers that each exist on a system, each shadow copy provider capable of providing a shadow copy of the volume upon command.

However, Slaughter clearly teaches the shadow copy is created by one of a plurality of shadow copy providers that each exist on a system, each shadow copy provider capable of providing a shadow copy of the volume upon command (*see column 6, lines 40-60; Note that each node creates a shadow copy and therefore serves as a provider to the master server. If an update fails, a command is sent to each node instructing each node to roll-back to an updated shadow copy.*).

It would have been obvious at the time of the inventions to modify the teachings of Linde and Talagala to incorporate the meta-data comprising file and directory entries as taught by Slaughter. The skilled artisan would have been motivated to modify the teachings of Linde and Talagala to incorporate the meta-data comprising file and directory entries as taught by Slaughter for the purpose of increasing availability, reducing interruption, and increasing consistency in data (*see column 2, lines 16-25*).

With respect to dependent claim 25, Slaughter further teaches the limitation where each shadow copy provider is designed to create a shadow copy for a particular type of application (108, Fig. 1) (*see column 3, lines 51-55; Note that the Client software communicates with cluster server to request database operations such as queries and updates.*).

With respect to dependent claim 26, Slaughter further teaches the limitation where the type of application comprises a volume verification application (*see column 4, lines 14-35; Note that Client communicates to the cluster server which utilizes a Cluster Membership Monitor (CMM) to maintain/verify the consistency between shadow copies on the nodes.*).

6. Claims 12, 13, 17, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linde in view of Talagala, in view of Slaughter, and further in view of Wu et al (U.S. 6,981,114 B1).

With respect to dependent claim 12, note the discussion of claim 4 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 4 but fail to explicitly recite the limitation of the meta-data indicates a hierarchy of the objects contained on the volume. However, Wu clearly teaches the meta-data indicates a hierarchy of the objects contained on the volume (*see column 3, lines 58-67*). It would have been obvious at the time of the

inventions to modify the meta-data as taught by Slaughter to include the file system as taught by Wu. The skilled artisan would have been motivated to modify the meta-data as taught by Slaughter to include the file system as taught by Wu for the purpose of increasing access availability and reducing the data recovery time (*see column 1, lines 55-61*).

With respect to dependent claim 13, note the discussion of claim 4 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 4 but fail to explicitly recite the limitation of the meta-data indicates where objects are stored on the volume. However, Wu teaches the meta-data indicates where objects are stored on the volume (*see column 6, lines 20-23*). It would have been obvious at the time of the inventions to modify the meta-data as taught by Slaughter to include the modification log as taught by Wu. The skilled artisan would have been motivated to modify the meta-data as taught by Slaughter to include the modification log as taught by Wu for the purpose of increasing access availability and reducing the data recovery time (*see column 1, lines 55-61*).

With respect to dependent claim 17, note the discussion of claim 15 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 15 but fail to explicitly recite the limitation of the raw volume includes a disk including partition information. However, Wu teaches the raw volume includes a disk including partition information (*see column 4, lines 43-50*). It would have been obvious at the time of the inventions to modify the raw volume as taught by Slaughter to incorporate partitions as taught by Wu. The skilled artisan would have been motivated to modify the raw volume as taught by Slaughter to incorporate partitions as taught by Wu for the purpose of increasing access availability and reducing the data recovery time (*see column 1, lines 55-61*).

With respect to dependent claim 31, note the discussion of claim 29 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 29 but fail to explicitly recite the limitation where the shadow copy is maintained by actions comprising copying each block that changes on the volume to another location before the block changes, wherein a request to read data from the shadow copy for a block that has changed in the volume is satisfied with data from the other location. However, Wu clearly teaches the shadow copy is maintained by actions comprising copying each block that changes on the volume to another location before the block changes, wherein a request to read data from the shadow copy for a block that has changed in the volume is satisfied with data from the other location (*see column 10, lines 56-67 through column 11, lines 1-27*). It would have been obvious at the time of the inventions to modify the maintenance of the shadow copy as taught by Slaughter to incorporate the block maintenance as taught by Wu. The skilled artisan would have been motivated to modify the maintenance of the shadow copy as taught by Slaughter to incorporate the block maintenance as taught by Wu for the purpose of increasing access availability and reducing the data recovery time (*see column 1, lines 55-61*).

7. Claim 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linde in view of Talagala, and further in view of Wu et al (U.S. 6,981,114 B1).

With respect to dependent claim 22, note the discussion of claim 1 above, the combination of Linde and Talagala disclose all of the elements of claim 1 but fail to explicitly recite the limitation where the shadow copy is created via at least one of a copy-on-write and split mirror. However, Wu clearly teaches the shadow copy is created via at least one of a copy-on-write and split mirror (*see column 4, lines 61-65*). It would have been obvious at the time of the

inventions to modify the creation of a shadow copy as taught by Slaughter to incorporate a copy-on-write snapshot creation method as taught by Wu. The skilled artisan would have been motivated to modify the creation of a shadow copy as taught by Linde and Talagala to incorporate a copy-on-write snapshot creation method as taught by Wu for the purpose of increasing access availability and reducing the data recovery time (*see column 1, lines 55-61*).

8. Claims 11, 14, 27 and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Linde in view of Talagala, in view of Slaughter, and further in view of Orcutt (U.S. 6,377,958 B1).

With respect to dependent claim 11, note the discussion of claim 4 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 4, but fails to explicitly disclose searching the entries for unreferenced security descriptors. However, Orcutt clearly teaches security descriptors (*see column 3, line 67 through column 4, line 1*). It would have been obvious at the time of the inventions to modify the searching of entries within a shadow copy as taught by Linde, Talagala, and Slaughter to incorporate security descriptors as a search field as taught by Orcutt. The skilled artisan would have been motivated to modify the searching of entries within a shadow copy as taught by Linde, Talagala, and Slaughter to incorporate security descriptors as a search field as taught by Orcutt for the purpose of limiting the risk of unintentional loss of user data (*see column 6, lines 36-43*).

With respect to dependent claim 14, note the discussion of claim 4 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 4, but fails to explicitly recite the limitation where the meta-data includes a security descriptor that indicates access rights associated with at least one object on the volume. However, Orcutt clearly teaches

security descriptors (*see column 3, line 67 through column 4, line 1*). It would have been obvious at the time of the inventions to modify the meta-data within a shadow copy as taught by Linde, Talagala, and Slaughter to incorporate security descriptors as a meta-data field as taught by Orcutt. The skilled artisan would have been motivated to modify the meta-data within a shadow copy as taught by Linde, Talagala, and Slaughter to incorporate security descriptors as a meta-data field as taught by Orcutt for the purpose of limiting the risk of unintentional loss of user data (*see column 6, lines 36-43*).

With respect to dependent claim 27, note the discussion of claim 23 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 23 but fails to explicitly recite the limitation of the volume comprises a volume formatted in accordance with FAT, NTFS, or UDFS. However, Orcutt clearly teaches a volume formatted in accordance with FAT, NTFS, or UDFS (*see column 8, lines 40-49*). It would have been obvious at the time of the inventions to substitute the volume as taught in Linde, Talagala, and Slaughter with the NTFS formatted volume as taught by Orcutt. The skilled artisan would have been motivated to substitute the volume as taught in Linde, Talagala, and Slaughter with the NTFS formatted volume as taught by Orcutt for the purpose of limiting the risk of unintentional loss of user data (*see column 6, lines 36-43*).

With respect to dependent claim 28, note the discussion of claim 23 above, the combination of Linde, Talagala, and Slaughter disclose all of the elements of claim 23 but fails to explicitly recite the limitation of the volume comprises a volume formatted for UNIX®, LINUX®, OS/2®, or BeOS®. However, Orcutt clearly teaches a volume formatted for UNIX®, LINUX®, OS/2®, or BeOS® (*see column 6, line 41*). It would have been obvious at the time of the

inventions to substitute the volume as taught in Linde, Talagala, and Slaughter with the LINUX® formatted volume as taught by Orcutt. The skilled artisan would have been motivated to substitute the volume as taught in Linde, Talagala, and Slaughter with the LINUX® formatted volume as taught by Orcutt for the purpose of limiting the risk of unintentional loss of user data (*see column 6, lines 36-43*).

***Response to Arguments***

Applicant's arguments, see page 9, filed this February 16, 2007, with respect to 35 U.S.C 112 have been fully considered and are persuasive. The 35 U.S.C. 112 rejection of claim 5 has been withdrawn.

Applicant's arguments with respect to claims 1, 3-19, 21-29, and 31 as they pertain to 35 U.S.C. 102 and 103 have been considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

*Points of Contact*

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jared M. Bibbee whose telephone number is 571-270-1054. The examiner can normally be reached on IFP.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Apu Mofiz can be reached on 571-272-4080. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JMB *JMB*

*[Signature]*  
SAM RIMELL  
PRIMARY EXAMINER